

the river and the floodplain. They could be best described as floodplain horticulturalists, using native and introduced crops that were grown on the rich silts laid down by annual floods. Ethnohistorically, two groups inhabited the area most germane to the current discussion. The Quechan (Yuma) lived in the area of the junction of the Gila River with the Colorado, while the Cocopah lived from below the junction of the Gila River with the Colorado to the delta. Both groups reportedly relied heavily on wild plants, fish, and land fauna of the area. Mesquite (*Prosopis* spp.) was an abundant and especially reliable resource. At the time of European contact, pumpkins, squash, beans, and maize were also being cultivated in the region. Wild resources, however, continued to make up a significant portion of the diet (Castetter and Bell 1951:56-57; Rea 1983). People lived in scattered small groupings among cultivated plots, often on slightly elevated portions of the floodplain. When floods occurred, the population retreated to the higher terraces along the river until the waters receded sufficiently to reenter the floodplain and reestablish dwellings and fields.

Although relatively dense human populations were found by the time of European contact (Forbes 1965), there is little doubt that the size of the prehistoric population of the lower Colorado River region was the same or greater. Little, however, is known about the prehistory of the region because of the almost total absence of archaeological materials within the floodplain. The remnants of early activities have been either washed away by flood waters of the Colorado River or buried deeply under silt deposits. As far as is known, no substantial residential sites have been found or studied in the project area or elsewhere along the lower portions of the river floodplain.

The existing archaeology of the region is found on the terraces above the floodplain of the lower Colorado River. More common site types include petroglyphs, intaglios, trails, a variety of rock constructions (cairns, alignments, rock circles, "hunting blinds," and other forms), and the remains of stone working. Of the latter, the most prominent are milling-implement quarries and their associated production "workshops."

The Milling-Implement "Industry"

The everyday lifeways of the indigenous peoples of the region included processing a variety of food (and other materials). That this was essential to survival cannot be overstated, although these common and repetitive tasks are not well reported in the ethnographic or historical literature. Ethnographic and historical accounts describe the milling implements used in this region (Bee 1983; Ceremoney 1868; Drunker 1941; Forde 1931; Gifford 1931, 1933; Heintzelman 1857; Kelly 1977; Spier 1933; Stewart 1968; de Williams 1983); every household had at least one set of a characteristically shaped, lower milling stone (metate) and a long, two-handed hand stone (mano), a wooden mortar (usually of mesquite or ironwood), and a long stone pestle.

A problematic situation concerns the fact that although tremendous quantities (e.g., an estimate of 46,000 stone pestles at Antelope Hill alone [Schneider 1998]) of milling implements were produced (Huckell 1986; Schneider 1993, 1998), relatively few used implements have been found at habitation sites because of the geomorphological processes that have been active over time within the Colorado and Gila River drainages.

The extensive archaeological remains of milling-implement procurement and production activities, however, support the idea that special processing equipment was a universal necessity. Evidence of the great intensity of milling-implement production lies mostly on terraces lining the rivers, at geological outcrops close to the floodplains, and occasionally on what would have been islands within the floodplains of the Colorado and Gila Rivers.

Schneider hypothesizes that mesquite (*Prosopis pubescens* [screwbean mesquite] and *Prosopis juliflora* [honey mesquite]) was the staple food plant of the lower Colorado River region during prehistory and that the design of the milling implements of this region (both the type of stone selected and the

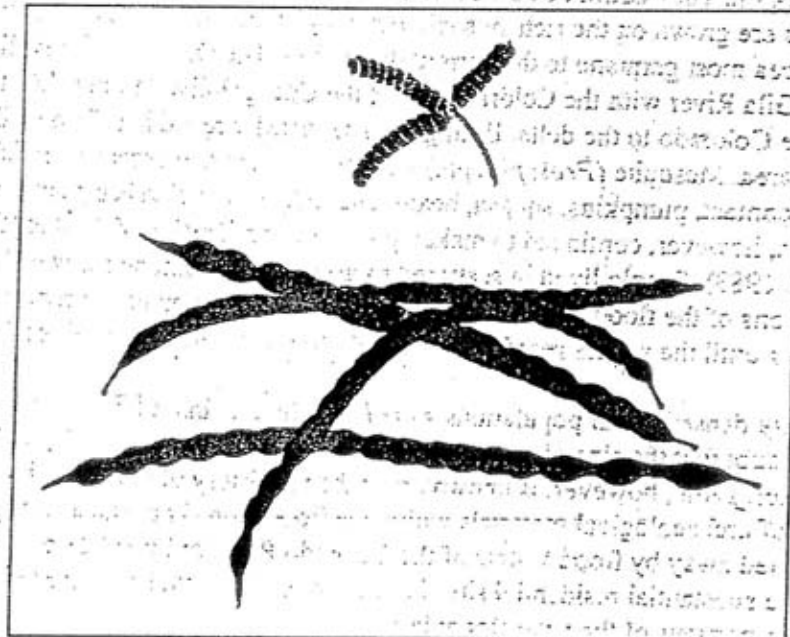


Figure 4. Mesquite pods. Top: *Prosopis pubescens* (screwbean mesquite); bottom: *Prosopis juliflora* (honey mesquite).

shapes and sizes of the implements) was developed in response to the need for efficient processing of this dietary element (Schneider 1993, 1996, 1998, n.d.). This view is supported by a number of other investigators who emphasize the importance of mesquite in aboriginal subsistence (Castetter and Bell 1951; Fowler 1995; Schroth 1987). The mesquite groves (bosques) in the floodplain of the lower Colorado were extensive, reliable, and the resource was high in protein and sugars (Figure 4). Processing mesquite beans required pulverizing the pods and grinding both the pods and the seeds. Later, the same processing tools used for mesquite were used for wheat, corn, as well as other substances.

Milling-Implement Quarries

Along the terraces of the lower Colorado River, at least two source types of stone used in the manufacture of prehistoric milling implements have been identified: andesite and other extrusive volcanics (Schneider 1993:175–194, 1994:101–117, n.d.) and secondary deposits of isolated boulders within desert pavement areas (Ezzo and Altschul 1993; Gieb 1986; Green 1990; Huckell 1986; Lerch 1990; Pendleton 1986; Schneider 1993:18, 40–43). Other areas in the region have also been identified as milling-implement quarry and production sites: Antelope Hill on the Gila River (Schneider 1993; Schneider et al. 1995); Texas Hill on the Gila River (Schneider et al. n.d.); Laguna Salada (field notes and photographs of Morlin Childers); and further away, Elephant Mountain on the Mojave River (Schneider 1993; Schneider et al. 1995); northern Death Valley alluvial fan surfaces (Antanitis et al. 1995); and several Hohokam settlement areas (Hoffman and Doyel 1985).

Schneider believes that certain characteristics of stone were being sought by indigenous peoples and that, where stone with these advantageous characteristics was identified, it was exploited for milling implements. She developed production trajectories for both stone pestles and lower millstones (metates). The shared characteristic of all stone used for milling-implement production was the existence of relatively large phenocrysts, or large angular grains within a finer-grained ground mass or matrix. Since a good deal of energy was expended on production, and the tools were shown to have traveled some

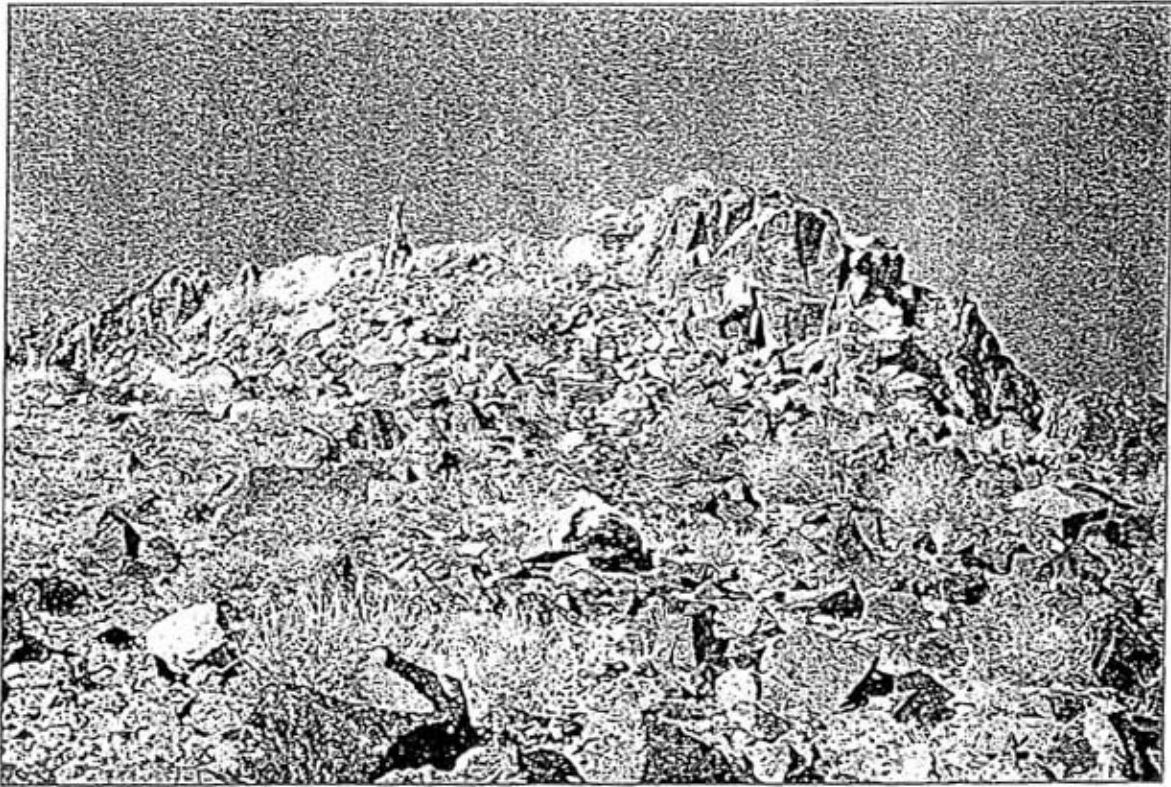


Figure 5. Bedrock quarry near Palo Verde Peak. The light-colored portion of the crest of the hill (to the left of the figure) is the quarried outcrop. Note the large blocks of stone and debris on the slope below the outcrop.

distance from the source of stone (Schneider 1993, 1998, n.d.; Schneider et al. n.d.), it was expected that they could be used for a relatively long time and not require constant resurfacing to maintain abrasiveness. Stone of this character included andesite, rhyolite, basalt, and sandstone. The exact requirements were found at a number of large rock outcrops where production was intensive (Figures 5–7). Huckell (1986) showed that in the isolated boulder fields along the eastern side of the lower Colorado River that he studied, individual boulders were tested for quality before extensive work took place (Figure 8).

At both types of quarries (bedrock and isolated boulders), however, the approach to the reduction of large pieces of stone to form milling tools was very similar (Figures 9 and 10). In the case of bedrock outcrops, there is substantial evidence (Schneider et al. n.d.) that indigenous peoples not only extracted rock from outcrops using only stone and wood or bone tools, but that, in some cases, excavation of superior stone took place (Figure 11).

Understanding Site Location

It is expected that where bedrock and/or large isolated boulders exist that have these advantageous characteristics, there will be archaeological evidence of the exploitation of stone and production of milling implements in the form of battered hammer stones, broken and discarded attempts at manufacture, and quantities of debitage. In that the milling tools were heavy and cumbersome to carry (Schneider 1993, Appendixes C and D), it is assumed that most milling-implement production areas are near the floodplain where people lived, where resources were available, and where plant processing took place. Our knowledge, to date, agrees with this assumption (Figure 12). Within the project area, there will be a strong

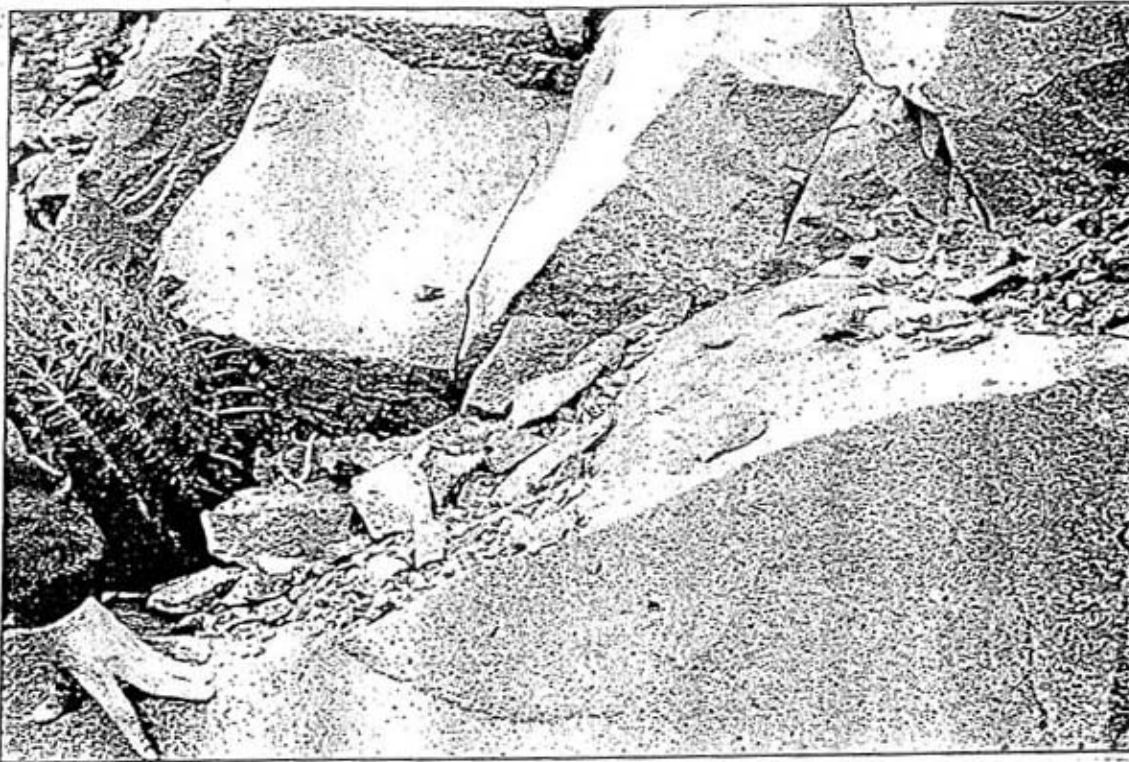


Figure 6. Close-up of another outcrop near Palo Verde Peak. Note the flake scars on large blocks of stone within the outcrop, indicating efforts to extract the blocks.

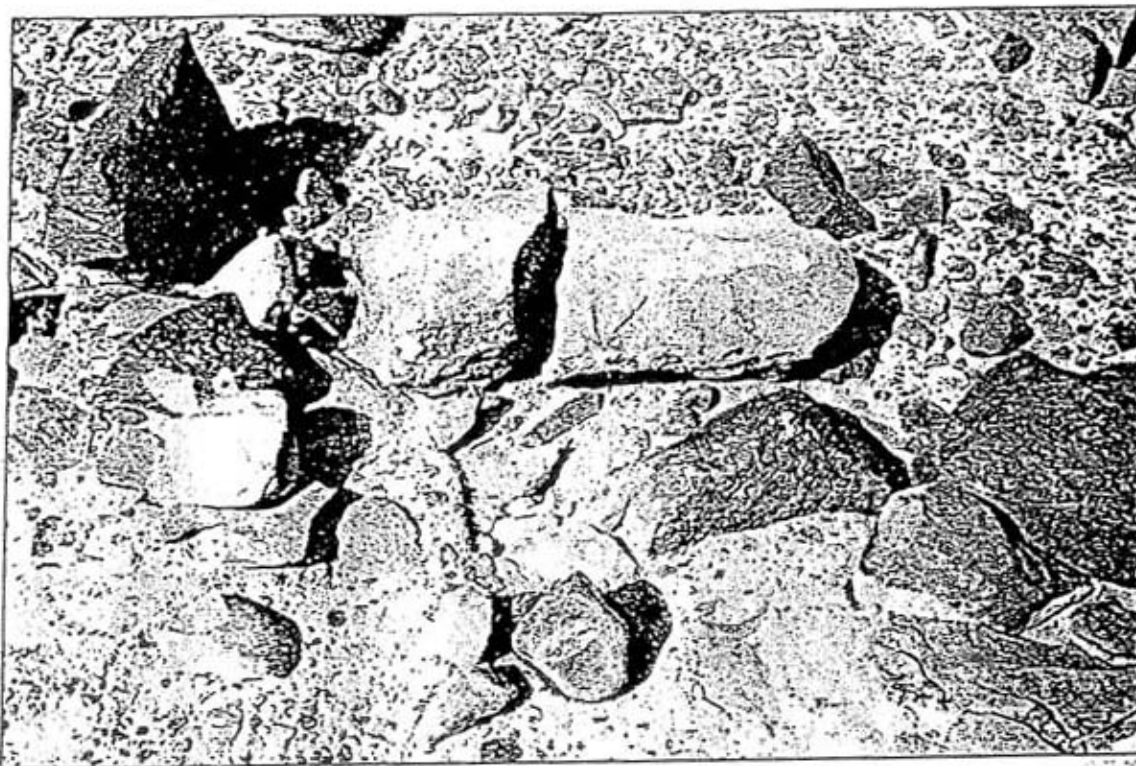


Figure 7. Production workshop at a quarry near Palo Verde Peak. Archaeological materials include a pestle preform broken during manufacture, percussion flakes, and at least three hammer stones (in foreground). The trowel at the upper right provides scale.



Figure 8. Metate-production workshop in the Bullhead City area studied by Huckell (1985) and Gieb (1986). Note the isolated large boulder, percussion flakes removed, and hammer stone spall.

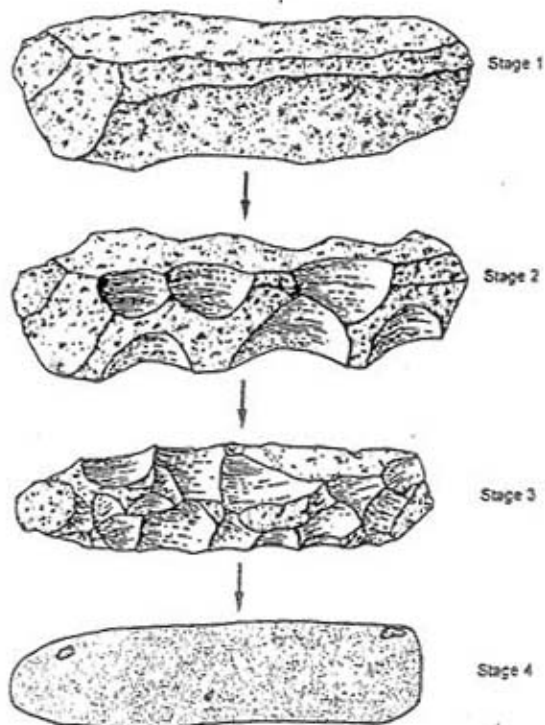


Figure 9. Production sequence for stone pestles (from Schneider 1993): Stage 1, block selected; Stage 2, initial shaping (large flakes); Stage 3, intermediate shaping (smaller flakes); Stage 4, final shaping and removal of flake scars by pecking.

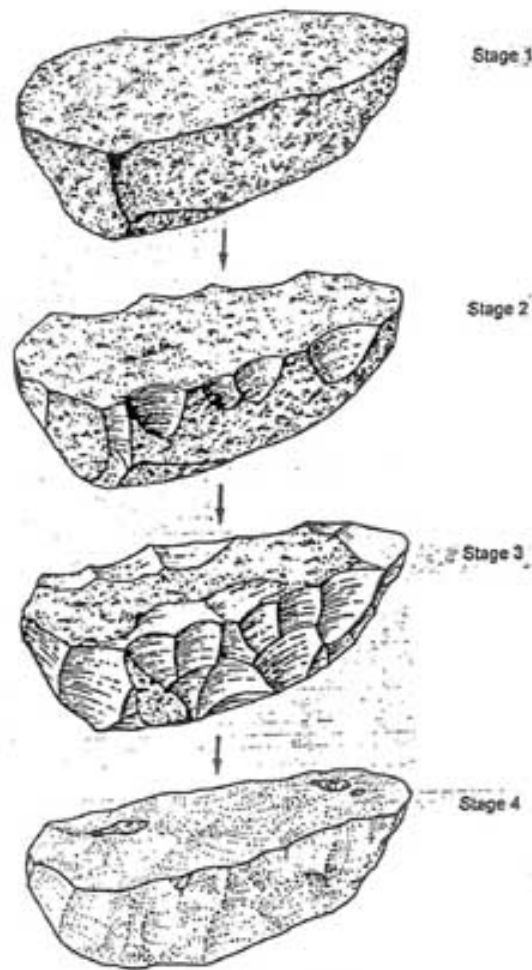


Figure 10. Production sequence for metates (from Schneider 1993): Stage 1, block selected; Stage 2, initial shaping (large flakes); Stage 3, intermediate shaping (smaller flakes); Stage 4, final shaping and preparation of the grinding surface by removal of cortex by pecking.

association with the Colorado River floodplain and delta. When considering this association, it is important to remember the documented (and undocumented) changing course of the river over time as well as the reconfiguration of the delta region. What might be farther-than-expected in modern times may have been closer to the river channel in the past (Kniffen 1931; La Rue 1916; Sykes 1937).

An Essay on the Landscapes and Cosmology of Yuman-Speaking Peoples

The Cosmology of the Yuman Landscape

The Yuman-speaking peoples and their ancestors imbued the landscape of the lower Colorado River with cosmological significance. To these peoples, the landscape is a product of the gods, a living, physiographic record of their triumphs and conflicts. In this rugged and unforgiving land dissected by the life-giving Colorado River, the Yuman-speaking peoples transformed the landscape into a representation of



Figure 11. Quarry pit at an outcrop at one of the milling-implement quarries on the lower Colorado River. Although difficult to see in the photograph, excavation and removal of the blocks of stone has occurred just to the left of the varnished portion of the bedrock in the center of the photograph. Debris from quarrying litters the surface.

their existence and their purpose for having been brought into the world. Baksh (1994) found that any number of hills overlooking the lower Colorado are viewed to have been formed by actions of good and evil deities as they battled along the river during the distant past (see example below). In addition, many unaltered or unmodified landforms are considered to possess cosmological significance. Newberry Mountain near Needles, California, for example, is known as Avikwaame, the place of creation; it was out of this mountain that the first human (the first Yuman-speaking peoples) emerged. As Lorey Cachora (1994:14) of the Quechan Indian Tribe has stated, "the Quechan historical record begins at a mountain and proceeds along the banks of the mighty Colorado River." Conspicuous landmarks such as Pilot Knob are considered to be places where spirits dwell; there are symbolic entrances to these landforms, and if a person wishes to communicate with the spirit world, such places are prime localities for this activity. The waters of the Colorado River are likewise sacred, considered to be the silvery blood that flowed from the body of the feared and monstrous Sky Rattlesnake after it was slain by the creator-god Kumastamho (sometimes referred to as Kwikumat [see Ezzo 1994a; Johnson 1985; Schaefer 1985b; Woods 1986]).

The people themselves have also modified the landscape in cosmological terms. More obvious examples include intentional alterations in the form of geoglyph (intaglio) construction and petroglyph execution, as well as unintentional modifications such as those shapes depressed into the ground as the result of repeated activities, such as ceremonial dancing. Many of the geoglyph sites represent the actual location of mythological events involving deities. Two of Baksh's (1994:23) Yuman informants, Weldon Johnson of the Aha Makav Culture Society, Fort Mohave Indian Tribe, and Lorey Cachora, described one site as follows:

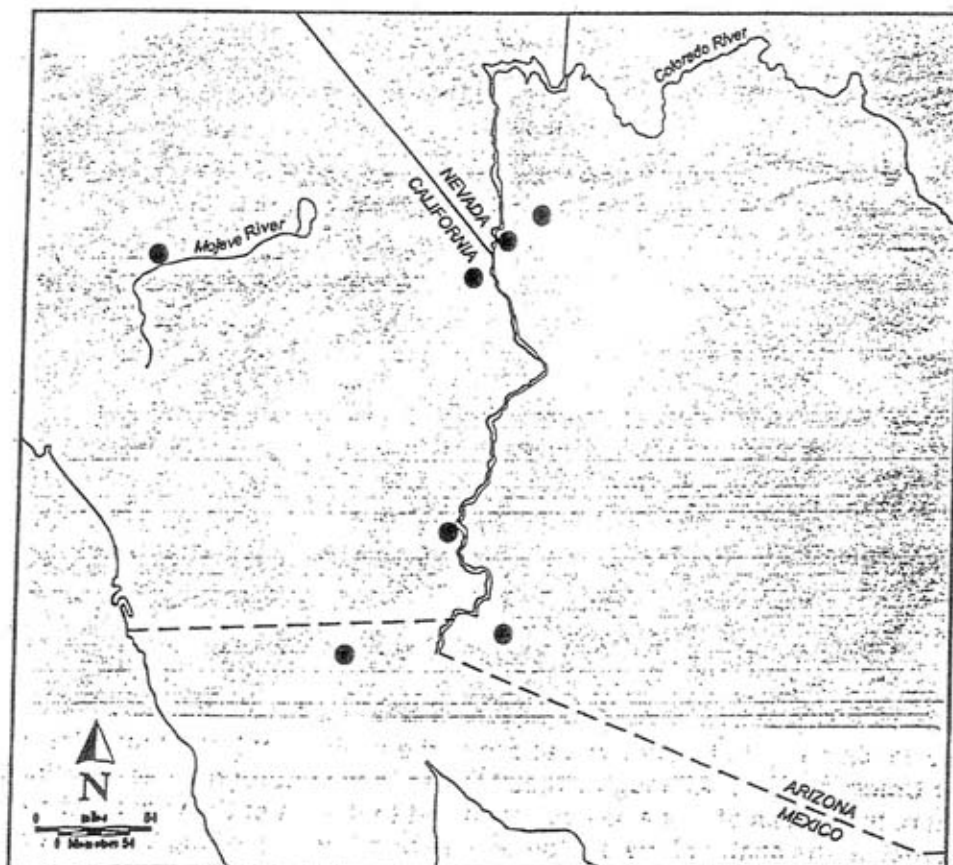


Figure 12. Map of known milling-implement quarries in the lower Colorado-lower Gila River region. Each dot represents one quarry or a group of quarries.

In looking at the archaeological field sketch, Mr. Johnson observed that there was originally more to the site than was illustrated, but that another associated figure may have been recently disturbed and not readily apparent. The other figure was a human's upper body with head and arms. This figure represented a giant who had staggered before falling off the edge of the terrace; the bottom half of his body cannot be seen because it had fallen into the river. The snake-like figure, which is still in decent condition, is not a snake, but the path where the giant staggered on the way to the river.

The concept of a giant falling or being dragged into the Colorado River may have been widely shared in Yuman mythology. Mr. Cachora related a myth about a giant boy who had been pulled into the river by a giant octopus. The giant boy was evil and his aunt or grandmother had asked the octopus to come and get him. The boy was dragged downstream and tried to escape, creating a place called Table Mountain when he slammed down his hand or knee when rising from the river, but was eventually drowned. Mr. Cachora explained that an intaglio of a human stick figure exists somewhere along the river bank where the giant boy was pulled into the river. The figure is missing part of a leg which had been pulled in the river by the octopus.

Another version of the legend tells of Ka-tarr (sometimes referred to as Blind Old Man [see Woods 1986]), the evil twin brother of Kumastamho, who had journey up the river and was bringing misfortune to the people living along the river. The people implored Kumastamho to put a stop to this, and he

responded by sending a giant octopus up the river who engaged Ka-tarr in battle. In the process the octopus tore off one of Ka-tarr's arms (and, in some versions, his head as well) before dragging him into the river. Ka-tarr's struggle can be seen in the formation of several mountains along the river. He is frequently depicted, as at Pilot Knob, as a one-armed stick figure (Ezzo and Altschul 1993d; Johnson 1985).

Landscapes are also altered in very subtle ways. Shrines consisting of two or three rocks stacked on top of each other, or a linear arrangement of a few stones used to mark a trail or a sacred place along a trail, are frequently encountered along the lower Colorado River. These subtle modifications generally blend in well with the surrounding landscape, making their identification difficult to the untrained eye. It appears that the Yuman-speaking peoples were attempting to maintain the harmony of the landscape while marking significant localities (Cachora 1994).

As discussed above, it has been inferred that the anthropomorphic and zoomorphic figures depicted in petroglyphs and geoglyphs represent key actors in the myths of the Cocopah, Quechan, and Mohave. Furthermore, it has been interpreted that certain motifs, such as spirals, represent sacred places in the creation myth; however, the sites where intaglios occur have been abandoned and apparently not used since the late nineteenth century. It was at this time that the Yuman-speaking peoples living along the lower Colorado River were confined to reservations and not permitted to travel freely along the river. Such travel was crucial to the maintenance of the elaborate ceremonial system that existed; this disruption resulted in the termination of certain rituals as they were traditionally practiced. Sacred space for the Yumans existed all along the river, and eventually knowledge of sacred areas was lost or transformed.

The *Keruk* Ceremony as Landscape and Cosmology

One of the most important ceremonies to Yuman-speaking people was the *keruk*, or mourning ceremony, which lasted for two weeks and required extensive travel along the lower Colorado River. The *keruk* trail, actually an elaborate network of trails (many of which are still visible today), extends from Pilot Knob, west of Yuma, Arizona, to Newberry Mountain, a distance of approximately 170 miles (Figure 13). In recent years, the work of a number of individuals (Altschul and Ezzo 1994; Baksh 1994; Cachora 1994; Ezzo 1994a; Ezzo and Altschul 1993d; Johnson 1985, 1992; Schaefer 1985a, 1985b; White 1994; Woods 1986) through archaeological survey, discussions with Native American informants, and ethnographic descriptions from the late nineteenth and early twentieth century by Trippel (1889), Kroeber (1920, 1948, 1951), Strong (1929), Forde (1931), and Spier (1933, 1935) as well as more recent work by Forbes (1965), Stewart (1969, 1983), Halpern (1980), and Bee (1981, 1983), have pieced this information together.

The *keruk* ceremony was an annual event that lasted for two weeks and included elaborate dance rituals such as reenactments of the Yuman creation as well as a pilgrimage that began at Pilot Knob and culminated at Newberry Mountain, known as *Avikwaame* (the place of creation), with stops at least three places along the way: Picacho Mountain; Black Point, north of Blythe, California; and the Riverside Mountains near Parker, Arizona. Each of these stops is a prominent marker on the physical landscape often containing a variety of intaglios, dance circles, sleeping circles, and trails and associated markers. It is appropriate to note that there are two types of intaglios: those deliberately constructed most likely in a single episode (such as human and animal forms) and those that were formed as the result of recurrent use (such as trails and dance circles).

The *keruk* ceremony commemorated all who died in the past year; in effect it sought to free the souls of the deceased so that they could begin their elaborate journey in the afterlife. Lorey Cachora (personal communication 1994) states that Quechan life consists of seven levels, the second of which is this life on earth. Of the five levels of the afterlife, he said very little, except that the seventh and final level was virtually impossible to achieve. The *keruk* was also a time for the living to commune with ancestor spirits and with the gods, who were thought to live in prominent landforms such as mountains or other

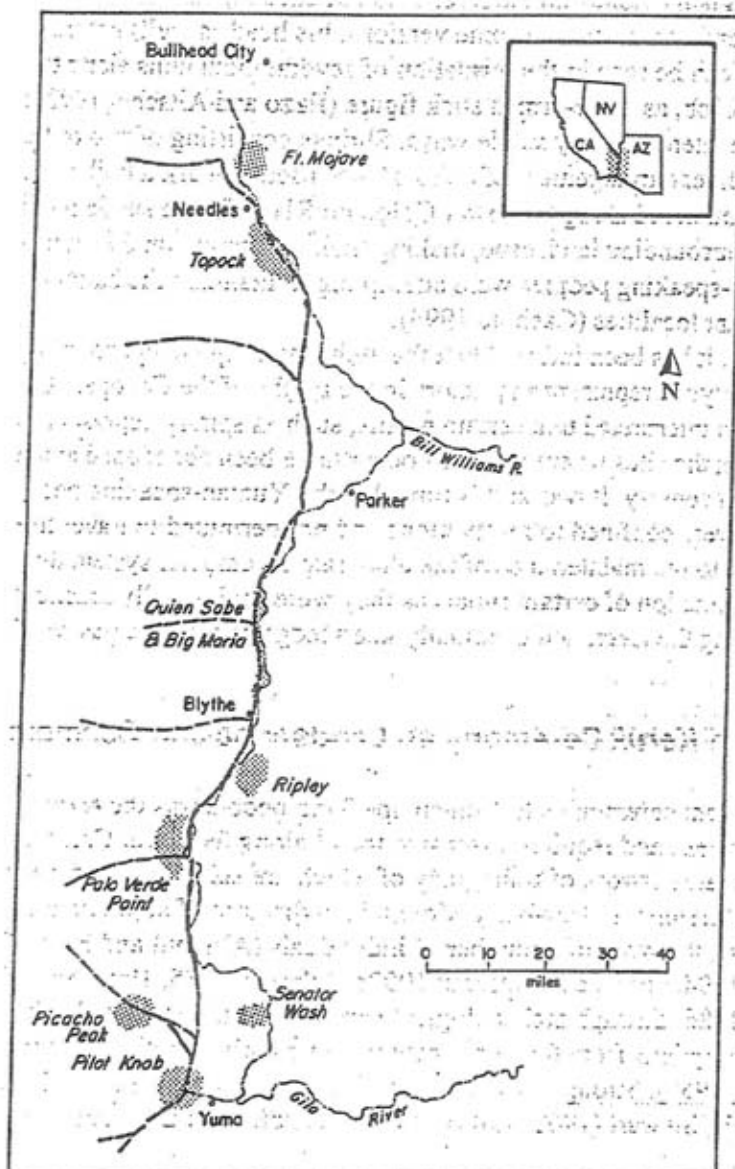


Figure 13. Map of the lower Colorado River showing the north-south (keruk) trail.

large rock outcrops (such as Pilot Knob). This was often achieved by scraping a circle on the ground surface, standing inside it, and shattering white quartz around it. The shattering of the quartz was thought to release spirits, with which one could then communicate. This was generally done at the base of the landform in which the spirits were thought to dwell.

Larger circular intaglios, often close to arrow-shaped rock alignments and located at the base of these landforms, were thought to provide a doorway into the mountain so that one can use this methods to communicate with spirits. This communication was undertaken to obtain knowledge of how to deal with the problems of this earth. Often people slept within these circles, as dreaming was considered an important medium for communicating with spirits. According to Cachora (1994), the act of dreaming returned people to the time of the creation, and people had the ability to learn through dreams.

If one ascends to the summit of Pilot Knob, which rises more than 600 feet over the surrounding Algodones Dunes, one can see Picacho Mountain, the second node on the keruk trail. This scenario

continues at each of the nodes extending to the north (visibility to both the adjacent southern and northern nodes), Black Point, the Riverside Mountains, and Newberry Mountain, the northernmost node of the chain. One interesting aspect of these landforms is that they are not all particularly great in elevation. Black Point, for example, is little more than a ridge top, yet is located at the edge of the Colorado River floodplain (which is several miles wide at this location) and therefore visible for a remarkable distance from the north and south.

As for the trails that make up the *keruk* trail, there are several key passes in mountains or hills, each of these considered sacred. Passes are viewed as stairways of sorts to the heavens; almost invariably these passes are marked very subtly, perhaps with a rock cairn, or a small cobble mound, or a short linear rock alignment. Sometimes they are marked with nothing more than two or three rocks stacked on top of one another. As Cachora (1994:13) states, "These sites are both physical features and spiritual cornerstones. They are often indistinguishable from the land by the untrained eye or those unfamiliar with regional Native American culture." Natural rock mounds are likewise considered sacred, regardless of their size, and such mounds are often culturally enhanced by the construction of a smaller mound next to them; this dual presentation, a larger and smaller mound side by side, is symbolic of *Avikwaame*. There are representations of this at Pilot Knob, Picacho Mountain, and Black Point.

The cosmological landscape of the *keruk* trail function both as center and edge of the regional landscape. In addition to embodying the most critical ritual of the Yuman peoples, it served to demarcate territory both for the Yumans and their neighbors. Since the *keruk* trail crossed through the domains of a number of separate Yuman groups, whose relationships with one another were often adversarial, various sites along the trail (particularly those containing rock art or intaglios) may also have represented boundaries between Yuman groups. Obviously, territorial boundaries changed through time, but the *keruk* trail and its sacred localities served as a cosmological overlay that bound separate but related peoples together at one level of existence. Its presence, then, must be viewed as both a physical and symbolic representation of Yuman cosmological expression.

Common Cosmological Elements with Other Cultures

Because so much sacred knowledge of the lower Colorado River landscape has been lost, interpretations of intaglios, petroglyphs, and more subtle alterations of the landscape are limited. One approach, however, that might be useful in future undertakings will be to attempt to link some of the symbols present to the cosmology of other traditional cultures. Although there are many caveats that must be considered in such an approach, one promising aspect concerns the presence of common elements shared by many of these Colorado River cultures. Narby's (1998) investigation of the possible relationship between DNA and shamanistic knowledge is a recent (and somewhat daring) exploration along such lines.

The concept of twin deities is extremely important to the cosmology of Yuman-speaking peoples. Kumastamho and Ka-tarr, the twin deities representing good and evil, are depicted together in several places along the lower Colorado River, including Pilot Knob and Black Point, two of the most concentrated areas of sacred symbols along the river (Ezzo 1994a, Ezzo and Altschul 1993d). They are often portrayed as stick figures lying close to each other, with Kumastamho being the larger. Occasionally Ka-tarr, as mentioned above, is depicted missing an arm and perhaps his head also. More significantly, the concept of twins is extremely widespread throughout the cosmologies of traditional peoples in many parts of the world. As Narby (1998) notes, twin creators—one good, one evil—are endemic in traditional myths through North and South America.

Several other common elements occur in Yuman cosmology, including the serpent motif. The importance of serpents in relation to the creation myth is virtually universal, with prominent myths found throughout the Americas, Australia, and Asia Minor (Narby 1998). Spirals and other designs depicting the world within the universe and/or the world as it was being created represent other common motifs.

Finally, the use of quartz crystals as sacred objects that allow one to communicate with the spirit world is endemic to the Americas (Eliade 1972; Reichel-Domatoff 1979).

Research Themes for Prehistoric Resources within the Lower Colorado River Region

The dearth of identified prehistoric resources within the lower Colorado River corridor is striking. This phenomenon has been attributed (by several authors) to the immense hydrologic energy of the Colorado River—its ability to remove sites through the process of scouring or bury them through the process of deposition. But does this mean that there is no archaeological research potential within the lower Colorado River valley? It has been indicated that the likelihood that cultural resources did not exist along the river during prehistoric times is exceedingly remote. The abundance of food resources associated with the riparian corridor almost certainly could not have been ignored by prehistoric inhabitants of the region.

Currently, we extrapolate prehistoric lifeways from information gleaned from sites away from the river. Our interpretations of the prehistoric composition of groups exploiting the resources of the lower Colorado River are, therefore, somewhat subjective. One of the major goals of archaeological research for the area in the coming years should be identifying sites (or site remnants) that may remain in the floodplain. This, though, as has been mentioned numerous times in the preceding discussion, is a problematic endeavor. Until such time as enough physical evidence of floodplain habitation can be collected, we will continue to pursue research questions based largely on information that is currently available. We have identified three research themes that we feel are significant to the current knowledge base of prehistoric life in the lower Colorado River valley: Archaic lifeways, prehistoric technology, and prehistoric ceremonial behavior.

Archaic Lifeways

Where in the Colorado River delta will we find the structures and artifacts telling us of the Amargosa people? Across the floodplain and buried by sediments may lie camps where Amargosa people lived, or task areas where they processed mesquite and screwbeans. These sites would have larger milling implements, flaked stone tools, or even rock rings that supported brush shelters. Other activities areas and camps could be found along sloughs, or where arroyos feed the great river. As the river meanders and cuts new channels, oxbow lakes are created. Several ancient lakes, now filled with sediments, can be seen in the delta. Here, where Archaic hunter-gatherers once may have hunted water fowl or harvested wild onion, camp sites would occur. Pathways to and from the river, drainages connecting to the New River across the dunes, also would have small sites where people stopped on their journeys to the Sierra Cocopah and beyond. The Yuma mesa, above the floodplain, was a pathway, north to south, and led people east. Here too, Archaic camps, trails, shrines, and rock circles will document the near-river activities.

Research Questions

1. What level of sedentism was incorporated in the Archaic lifestyle? Did these levels change through time?

2. What degree of the Archaic seasonal round was spent in the immediate vicinity of the river? What were the most desirable resources during the Archaic?
3. If Archaic-period existence in the lower Colorado River region reflected a low degree of sedentism, what configuration will Archaic sites assume?

Data Requirements

Certainly the primary element in the equation of better defining the Archaic occupation of the area is to identify Archaic-period archaeological contexts within the Colorado River corridor. Until such time that these resources can be identified, one of the most important clues into prehistory during the Archaic comes through paleoenvironmental reconstruction. Through adequately defining the environment during the Archaic, we gain insight into resource exploitation and subsistence strategies.

Technology

The shift from a more traditional hunter-gatherer model of land use during the prehistoric period to one based more on floodwater agriculture is reflected in technological changes in the processing of exploited resources. The introduction and evolution of a milling-implement industry suggests a dramatic shift in aboriginal subsistence patterns for the lower Colorado River region. This technological "revolution" suggests a shift of cultural patterns on many levels—movement away from the traditional seasonal round, a more sedentary lifestyle suggesting the amalgamation of greater numbers of individuals in increasingly confined space, and changing emphasis on exploited resources, to name a few.

Research Questions

1. How best can we demonstrate changes in traditionally exploited resources with the introduction of the milling-implement industry?
2. Is there evidence of diminished use or activity at milling-implement procurement sites as distance from the river increases? Do these patterns change through time?
3. To what level were nonadvantageous source materials used in the production of milling implements? Is this a factor of proximity to the river?

Data Requirements

The identification of floodplain-based cultural resources will provide the greatest insight into changes that occurred as prehistoric groups adopted an increasingly sedentary lifestyle. Short of this, increased research into a reconstruction of the paleoenvironment during the Patayan period will address issues of increased milling implement use throughout the lower Colorado region.

Ceremonial Behavior

The development of a historic context that focuses on ceremonial behavior stems from two sources: the repeated motif of ceremonial sites highlighting the landscape away from the Colorado River floodplain, and the interest we have developed in understanding the nature of ceremonial activity and the relation-

ship of ceremonial sites to ethnographic accounts of ritual activity along the lower Colorado River (Ezzo and Altschul 1993d). In our treatment of ceremonialism, we acknowledged that archaeologists will often assign a sacred or ceremonial function to a site or a feature when they are unable to develop an adequate economic or technological function for it.

Ceremonialism has long been a critical focus in the lives of Yuman-speaking peoples (Forbes 1965; Kroeber 1925; Strong 1929). This is most evident today in comments made by informants regarding the nature of intaglios and petroglyphs (see Ezzo 1994a). Much of the behavior associated with ceremonial sites concerns re-enactments of the creation, of the journey of life, while others depict cosmological events. The location of the event-based sites is thought to coincide with where the original events occurred (Lorey Cachora, personal communication 1994). It has been noted that certain trails have sacred/ceremonial significance as well (see Ezzo 1994a: Chapter 10).

Research Questions

Pertinent research questions concerning the historic context of ceremonial behavior include:

1. Can we infer the performance of the *keruk* or any activity related to the *keruk* in the study area?
2. How do various feature types (circular paths, abstract forms, anthropomorphic and zoomorphic forms, linear paths, rock mounds) relate in terms of ceremonial behavior?
3. What types of features are associated with ceremonial intaglios? Is there evidence for the use of milky quartz and cobble pavements, as seen at Pilot Knob and Big Maria Terrace?
4. Are there sites that contain domestic and ceremonial features? What is the range of activities evident at such sites?
5. How do trails relate to ceremonial features in the project area?

Data Requirements

Cultural properties likely to yield significant information regarding this historic context include all sites with intaglios and/or rock art. Critical observations on intaglios include determining the construction of the intaglio (scraped out of the desert pavement versus tamped into the pavement), the forms of the intaglio (anthropomorphic, zoomorphic, circular, abstract, etc.), stylistic variation between intaglios of the same types, directional orientation of the intaglio, the geomorphic landform on which the intaglio is located, and features associated with the intaglio. Observations on rock art are similar, with attention paid to the method of committing the glyphs onto the rock (etched, incised, pecked, etc.).